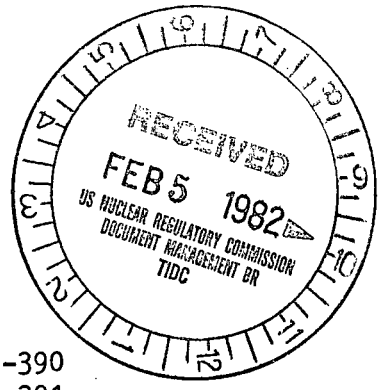
TENNESSEE VALLEY AUTHORITY
CHATTANOOGA, TENNESSEE 37401
400 Chestnut Street Tower II

January 29, 1982



Director of Nuclear Reactor Regulation
Attention: Ms. E. Adensam, Chief
Licensing Branch No. 4
Division of Licensing
U.S. Nuclear Regulatory Commission
Washington, DC 20555

Dear Ms. Adensam:

In the Matter of the Application of) Docket Nos. 50-390
Tennessee Valley Authority) 50-391

Enclosed for NRC review is information concerning "Specific Criteria for Allowable Buckling Loads on Class 2 and 3 Supports" for Watts Bar Nuclear Plant (WBN). This information will resolve NRC Mechanical Engineering Branch concern B15 which has been designated as open item 15 in the draft WBN Safety Evaluation Report.

If you have any questions concerning this matter, please get in touch with D. P. Ormsby at FTS 858-2688.

Very truly yours,

TENNESSEE VALLEY AUTHORITY

L. M. Mills, Manager
Nuclear Regulation and Safety

Sworn to and subscribed before me
this 29th day of January 1982
Paulette T. White
Notary Public
My Commission Expires 9-5-84

Enclosure

B001
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1/1

ENCLOSURE

WATTS BAR NUCLEAR PLANT UNITS 1 AND 2
ITEM B15

Specify Criteria for Allowable Buckling Loads in Class 2 and 3 Supports

Faulted loads on supports are determined by an absolute sum of all primary plus secondary loads in the system. Loads on standard support components such as snubbers are sent to the contractor who selects a component which has been load tested to applicable codes. The allowable stress in structural steel is 1.6 times AISC allowable for Service Level D. This is always less than 90 percent of the critical buckling strength. It was pointed out that Appendix F of the ASME Code, Section III, does not define critical buckling; however, the intent of the Code is 2/3 of the Euler critical buckling. Based on this, the attached table was generated. This data shows that short columns (L/r less than 100) do not tend to buckle and failure is by yielding as in tension or bending. However, the design concepts used for pipe supports at WBN preclude the use of columns with L/r in excess of 100.

Item B15
Attachment

AISC = Critical Compressive Stress/Factor of Safety
AISC = C/F
or C = (AISC)(F)
NRC (2/3)(critical) = (2/3)(AISC)F

L/R	AISC	F	1.6(AISC)	(2/3)(AISC)(F)	
1	21.56	1.67	34.49	24.01	1.44
10	21.16	1.70	33.86	23.99	
20	20.60	1.73	32.96	23.77	
30	19.94	1.75	31.90	23.27	
40	19.19	1.78	30.70	22.78	
50	18.35	1.81	29.36	22.15	
60	17.43	1.83	27.89	21.27	
80	15.36	1.85	24.57	18.95	
100	12.98	1.89	20.77	16.36	
120	10.28	1.92	16.44	13.16	
140	7.62	1.92	12.19	9.76	
160	5.83	1.92	9.33	7.46	
180	4.61	1.92	7.38	5.90	
200	3.73	1.92	5.97	4.77	1.25